

REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

I. CLAIM STATUS AND AMENDMENTS

Claims 1 and 6-17 were pending in this application when last examined and stand rejected.

Claims 16 and 17 are amended to clarify the claimed invention.

Claims 18 and 19 are newly added. The basis of the phrase "psbA promoter" of newly added claim 18 can be found on page 19, lines 2-4 of the specification. The basis of the phrase "rps16 terminator" of newly added claim 19 can be found on page 19, lines 17-18 of the specification.

No new matter has been added.

II. INDEFINITENESS REJECTION

On pages 2-3 of the Office Action, claims 16-17 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. This rejection is overcome, as applied to the amended claims, for reasons which are self-evident.

III. OBVIOUSNESS REJECTION

On pages 3-5 of the Office Action, claims 1 and 6-17 were rejected under 35 U.S.C. § 103(a) as obvious Yokota et al. (EP 1036842), in view of Maliga et al. (US Patent No. 5,877,402), in view of Palatnik et al. (US Patent No. 6,781,034) and further, in view of Gegenbach et al. (US Patent No. 6,146,867). Applicants respectfully traverse this rejection.

The Examiner states that it would have been obvious to use the method taught by Maliga to target the transformation of the cyanobacterial FBPase/SBPase taught by Yokota to chloroplasts to increase photosynthesis with greater efficiency as suggested by Maliga.

However, Yokota teaches that an FBPase/SBPase gene-containing plasmid was purposely introduced into a tobacco nuclear gene, even though expressed FBPase/SBPase protein was ultimately localized in the chloroplast (paragraph [0017] of Yokota). This means that, in Yokota, introduction of the FBPase/SBPase gene into the chloroplast gene was avoided.

Therefore, one of ordinary skill in the art would not use the FBPase/SBPase gene taught by Yokota as the gene inserted between the Rubisco large subunit gene and the acetyl CoA carboxylase subunit gene of Maliga to introduce the FBPase/SBPase gene into the chloroplast genome.

Furthermore, the FBPase/SBPase gene-containing vector of the claimed invention is superior to that taught by Yokota. This surprising and unexpected effect is shown by the declaration attached hereto (Attachment A).

Specifically, the photosynthesis activity of transformants with the vector of the claimed invention is about 1.5 to 1.7-fold higher than that of transformants with the vector of Yokota. In addition, FBPase activity of transformants with the vector of the claimed invention is about 6 to 23-fold higher than that of transformants with the vector of Yokota. These results are surprising and unexpected to a person of skill in the art.

As the result, the invention of claim 1 is unobvious from Yokota and Maliga.

Since the inventions of claims 6-11, 13-15 and 17-19 are all dependent on claim 1, these claims are also unobvious from Yokota and Maliga. Furthermore, the invention of claim 12 has the elements of claim 1 with regard to its unexpected properties. Thus, this claim is also non-obvious over the cited references.

Claim 16 recites a plant having 2-fold or higher FBPase activity compared to the wild plant wherein FBPase/SBPase gene is introduced into the chloroplast genome. As mentioned above, Yokota suggests that it is disadvantageous to introduce the FBPase/SBPase gene into the chloroplast genome. Therefore, one of ordinary skill in the art would not introduce FBPase/SBPase gene taught by Yokota into the chloroplast genome. In addition, the FBPase activity of the transformed plant of claim 16 is higher than that of the transformed plant of Yokota, as evidenced by the declaration attached hereto.

Accordingly, the invention of claim 16 is unobvious from Yokota and Maliga.

Thus, for the above-noted reasons, this rejection is untenable and should be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and early notice to that effect is hereby requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact the undersigned attorney at the telephone number below.

Respectfully submitted,

Akiho YOKOTA et al.

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Attachment(s): Declaration Under 37 CFR 1.132 (Attachment A)

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